



Carolina Skies

National Weather Service, Wilmington, NC

Winter 2003

NWS Wilmington Mesonet Project

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SC NWR

Transmitter To Be Installed

A grant application for more than \$49,000 was approved by the U.S. Dept. of Agriculture for the installation of a transmitter just north of Georgetown, SC.

Reception in southern Georgetown County has been weak, coming from the transmitters near Conway or Charleston or Cross, with the latter two transmitters broadcasting information from the NWS office in Charleston, along with severe weather warnings from NWS Wilmington. As these VHF transmitters have a range up to about 40 miles, Georgetown was on the fringe. Installation of the transmitter is expected later this year.

Exciting and changeable weather often visits the coastal Carolinas. From thunderstorms and hurricanes during the summer to strong Nor'easters during the winter, our weather stays interesting year round. Many people have recently purchased inexpensive rooftop weather stations to help track these rapid changes in our weather. These stations are made by a variety of manufacturers and report wind speed and direction, temperature, humidity and dewpoint, barometric pressure, and rainfall. Some of the premium models will even compute UV index, evaporation rate, and soil temperatures. Other options available include wireless transmission to the indoor display unit, and solar panels which replace the need for batteries. Prices for basic electronic weather stations begin around \$150.

Some people have taken the next step and have hooked their personal weather stations into a home computer. There are many different software packages available (some of them free!) which display and archive weather readings automatically. Many of these same software packages also allow you to post your live weather reports to a personal webpage or to a website devoted to collecting internet weather observations. One such website now compiles observations from more than 7,000 stations across the United States and the world.

The National Weather Service in Wilmington has started a project to tap into this new, rich source of weather information to improve our warning and forecast programs. Every 15 minutes, we now collect data from nearly two dozen of these personal weather stations in eastern North and South Carolina. Our staff of meteorologists can now combine your backyard weather report with dozens of others to improve our short-term weather warnings and forecasts. We also redistribute all these weather observations in the form of a summary available on the internet every 15 minutes.

If you would be interested in participating in this completely volunteer program, here's a few things you'll need:

1. A rooftop weather station. Prices start around \$150. Check an internet auction site for the best deals.
2. A personal computer. Almost any PC or Mac will do.
3. An always-on internet connection like a dedicated phone line, cable, DSL, or a company/school LAN. This is necessary to get the weather data sent to the internet and the NWS.

Choosing a good place for the instruments is up to you, but try to follow these simple rules: Try to keep thermometers out of direct sunlight. Keep rain gauges away from tall trees and buildings. Put anemometers (which measure wind speed) as high up off the ground as possible and away from tall trees and buildings. Failure to position your instruments properly will result in weather readings that are not accurate.

For more information about home weather stations in general, or how you can participate in this new volunteer network, please contact NWS Wilmington meteorologist Tim Armstrong email:

timothy.armstrong@noaa.gov

Who knows - your backyard weather station may be the one that reports the highest wind gust during a hurricane, the heaviest rain during a flood, or the warmest or coolest temperature during an extreme weather event.

On the web:

<http://www.erh.noaa.gov/ilm/current/mesonet.shtml>

Changes Coming to the Rip Current Program

The National Weather Service office in Wilmington, North Carolina is responsible

for issuing rip current threat potential forecasts during the beach season. Although rip currents can occur at anytime, the intent of the program is to warn the public on those days when rip currents are expected to become very strong. For the Carolinas, rip currents usually occur with a higher frequency and are stronger when long period swell is impacting the coastline. This swell may be from a hurricane that is several hundred miles away.

The rip current forecast information can be found with other beach related parameters in the Recreational Beach forecast. The Recreational Beach Forecast is broadcast on NOAA Weather Radio and posted to the internet (<http://www.erh.noaa.gov/er/ilm/rip/>) daily during the warm season. Beginning around April 1, 2003 these forecasts will resume.

The changes for the upcoming year include product segmentation where the coastal counties can be grouped together as needed to better represent any condition contained in the Recreational Beach Forecast. The segmented forecast will allow for more flexibility in the way the forecast parameters are displayed graphically. Also, the terminology used to describe the rip current conditions (last year - Low Threat, Increased Threat, and Dangerous Threat) will be

changing based on nationally defined standards. The new guidelines will be available by the Spring issuance of Carolina Skies.

Tides-on-the-Go

The National Ocean Service (NOS) has developed an informative website that contains tide predictions for many locations along the coast of the United States. The tide times for the Carolinas can be found at the following web address:

<http://co-ops.nos.noaa.gov/tides/tpred2.html#NC>

In addition, you can access measurements from a network of tide gauges maintained by the NOS at:

<http://tidesonline.nos.noaa.gov/geographic.html>

These charts plot the predicted tide height versus the observed conditions. Some of the stations have other information available, such as sea water temperature plots. The NWS heavily relies on these stations during coastal flood events to determine the extent of coastal flooding.

Watches, Warnings, Advisories...What?

We find that many people do not know the difference between, say, a Winter Storm Watch, a Winter Storm Warning, and a Winter Storm Advisory.

We also issue Watches and Warnings for Severe Thunderstorms, and we issue Watches and Warnings for Flooding, Excessive Heat, Wind Chill, Hurricanes and Tropical Storms, High Wind, etc.

When we issue a Warning, we are saying that something is happening or is about to happen, and it is dangerous to life and/or property. A Freeze Warning, for instance, is issued at the beginning or end of the growing season, when plants and crops are likely to be severely damaged by the expected cold, but people will likely not be killed since they can find shelter. A Tornado Warning or Flood Warning, however, means that the event is happening now or is expected to occur soon and poses a danger to people and property.

A Watch is like a Warning in that we expect a life/property dangerous event to occur. The difference is that while conditions are ripe for the event, the timing and place of strike is not yet clear.

We are watching and so should you. When we get more information either on radar or from other sensors and we can “see the whites of the eyes”, we issue a Warning or multiple Warnings, as we issue many county Severe Thunderstorm Warnings during a Severe Thunderstorm Watch.

We issue Advisories for significant weather events that require an extra level or preparedness or caution, but fall below the threshold of a direct threat to life and property. For instance, we issue a Dense Fog Advisory when prevailing visibility falls below 1/4 mile. Fog won't kill you, but you need to drive with caution or you may have problems.

The National Digital Forecast Database

Work continues to improve NWS services to our partners and users. Our website, <http://www.erh.noaa.gov/er/il> shows a map display of counties, where a mouse click on a county yields all the warning and forecast information, as well as quick access to current observations and other information. The 120 NWS offices around the nation have similar websites...to pick one, click on **LINKS** at the bottom of our main page.

Where are we headed? From our main webpage, under **FORECASTS**, click **GRAPHICAL**, and behold our suite of gridded forecast images. Forecasters do not write forecasts any more - we now create those gridded forecast images using the NWS AWIPS (Advanced Weather Interactive Processing System), and from the data in those images, AWIPS “writes” most of the forecasts that you hear on NOAA Weather Radio.

All 120 NWS offices are at work developing similar gridded forecast images, which show expected conditions every three hours through seven days for temperature, humidity, sky cover, wind, precipitation (type, probability and amount)...and more conditions are on the way, such as visibility, cloud heights, sea conditions, winds aloft...

Because different users have different needs, gridded forecasts will answer questions that simple written forecasts cannot...from the TV media showing interesting aspects of an upcoming event to pilots concerned with flying conditions to firefighters to picnic planners.

As gridded forecasts are still in the formative stages, not only must each forecaster learn this process...also, neighboring NWS offices will have to develop better

collaboration tools to make these detailed forecasts appear seamless as the user moves from one area to another.

The result of interoffice collaboration will ultimately be the nationwide National Digital Forecast Database. We expect to have the project available for you by late this year.

See the National Weather Service national website: <http://www.nws.noaa.gov/>, and click on the map for information from anywhere. Soon you will have gridded forecasts as well.

Climate Corner

Temperatures overall across Northeastern South Carolina and Southeastern North Carolina were slightly below normal for the period of October, November and December. After a warmer than normal October, where temperature averaged 2.5 to 5 degrees above normal, colder weather settled in across the area in November, and temperatures area wide dropped to 1.2 to 3.3 degrees below normal. This cooling trend continued into December, with temperatures averaging 1.8 to 3.9 degrees below normal.

Precipitation overall across Northeastern South Carolina and Southeastern North Carolina were slightly below normal for the period of October, November and December. October's rainfall

totals were only about two tenths of an inch below normal area wide. November was the wettest month, with rainfall totals area wide a little over a half inch above normal. Precipitation again fell back below normal in December, with area wide averages a tad over three quarters of an inch below normal.

The year of 2002 overall was warmer and drier than normal across the eastern Carolina's. Temperatures overall for the year ranged from 0.5 to 3 degrees above normal. Precipitation averages across the area continued to be below normal with an average deficit of 7.6 inches, further aggravating the area's long term drought situation. But the 2002 rainfall deficit was significantly less than the rainfall deficit for 2001, when the eastern Carolina's saw rainfall deficits averaging 13.15 inches below normal.

HAM Radio

Skywarn

Recognition Day

Communication is crucial during dangerous weather events. When the going gets tough the HAM radio community is always there, providing reports of local conditions and storm damage.

On December 7, the NWS held HAM Radio Skywarn Recognition Day. For a 24-hour period, amateur radio operators at more than 110

NWS offices nationwide shared the airwaves and exchanged information. From Brownsville to Boise, Vermont to Fresno, from the National Hurricane Center to Hawaii...it was on Pearl Harbor Day, and they shared conditions on Dec. 7, 1941.

Representing NWS Wilmington were Skywarn Coordinator Rick Tharrington and assistant (and master carpenter) Glenn Cox. Thanks very much, gentlemen!

Groundhog Day Observed

The 5th annual NWS Groundhog Day Observance was held on Feb 5. Actually, Groundhog day is an excuse for County and State Emergency Managers, TV weather casters, newspaper writers, Amateur Radio operators, and other partners and users to gather annually to get reacquainted and discuss current NWS programs as well as future developments. It is important that we work together and be familiar with our mutual tools.

We discussed forecast accuracy, fire weather forecasts, marine weather issues, river forecasting and flooding, the Skywarn spotter program, StormReady, coordination during hazardous material spills, the upcoming Severe Weather Watch program and the National Digital Forecast Database.

Drought Ends Across the Carolinas...What's Ahead for Spring?

Drought conditions persisted across the Carolinas throughout the summer of 2002 with many streams reporting record low levels. During the fall, however, a change in weather patterns brought increased precipitation to the region. During the month of November, the region saw an increase in weather systems advancing from south to north over the Carolinas. Many systems transported Gulf coast moisture to the region and resulted in beneficial rains. The months of October and November saw above average rainfall totals with the month of December ending up near the climatological average.

All of the additional rainfall helped alleviate persistent drought conditions across the Carolinas during the month of December. Stream levels went from record low readings in the July and August of 2002 to near and even above normal levels during November and December. At the start of 2003, the weather patterns temporarily changed as the region saw a colder and drier pattern during the month of January 2003, resulting in below normal rains.

What does all this mean for the future? Moderate El Nino conditions persist in the Pacific. This should result in a more active weather pattern in the East this spring and more rain as a result. The National Weather Service Outlook for February and March calls for above normal rainfall and near normal temperatures.

Winter's Impact

Sometimes winter storms are accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, severe drifting and dangerous wind chill. Strong winds with these intense storms and cold fronts can knock down trees, utility poles and power lines. Storms near the coast can cause coastal flooding and beach erosion. In the West and Alaska, winds descending off the mountains can gust to 100 mph or more damaging roofs and other structures.

Extreme cold often accompanies a winter storm or is left in its wake. Prolonged exposure to the cold can cause frostbite or hypothermia and become life-threatening. Infants and the elderly are most susceptible. What constitutes extreme cold and its effect varies across different areas of the United States. In areas unaccustomed to winter weather, near freezing temperatures are considered "extreme cold". Freezing

temperatures can cause severe damage to citrus fruit crops and other vegetation. Pipes may freeze and burst in homes that are poorly insulated or without heat. In the north, below zero temperatures may be considered as "extreme cold". Long cold spells can cause rivers to freeze, disrupting shipping. Ice jams may form and lead to flooding.

Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians.

Heavy snow can immobilize a region and paralyze a city, stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services. Accumulations of snow can collapse buildings and knock down trees and power lines. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost. The cost of snow removal, repairing damages, and loss of business can have large economic impacts on cities and towns.

OCT	NOV		DEC		FOR THE PERIOD		
TMP DEP RAIN/DEP	TMP/DEP RAIN/DEP	TMP/DEP RAIN/DEP	TMP/DEP RAIN/DEP	TMP/DEP RAIN/DEP	TMP/DEP RAIN/DEP	TMP/DEP RAIN/DEP	

WILMINGTON

67.6 / 2.7	2.34/-0.87	53.2/-3.3	3.06/-0.20	45.6/-3.4	2.53/-1.25	55.5/-1.3	2.64/-0.77
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NORTH MYRTLE BEACH

68.0 / 3.3	3.19/-0.04	53.4/-1.2	4.08/ 1.11	45.6/-2.2	3.17/-0.28	55.7/ 0.0	3.48/ 0.26
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FLORENCE

66.6 / 2.5	3.20/ 0.26	52.1/-3.3	2.77/ 0.18	43.6/-3.9	2.17/-1.30	54.1/-1.6	2.71/-0.29
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LUMBERTON

66.0/ 5.0	3.33/-0.03	51.3/-1.5	3.79/ 1.10	42.9/-1.8	2.90/-0.32	53.4/ 0.6	3.34/ 0.25
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OVERALL REGION WIDE

67.1/ 3.4	3.02/-0.17	52.5/-2.3	3.43/ 0.55	44.4/-2.8	2.69/-0.79	54.7/-0.6	3.05/-0.14
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+/- .1 DUE TO ROUNDING

2002

	Temp	Normal	Average	Precipitation	Normal	Deficit
ILM	64.3	63.6	0.7	49.35	57.07	-7.72
FLO	64.1	62.8	1.3	36.49	44.76	-8.27
MYR	64.1	63.6	0.5	39.34	45.72	-6.38
LBT	63.1	60.1	0.3	40.10	47.98	-7.88
						-7.56

2001

Precipitation	deficit
37.98	-19.09
30.83	-13.93
39.57	-6.15
34.56	-13.42
	-13.15